## Add the following new claims

- 19. A method of manufacturing a dissipative bonding tip comprising:
- forming a dissipative material as a bonding tip that has a resistance low enough to 2
- prevent a discharge of charge to a device being bonded and high enough to avoid current
- flow large enough to damage said device being bonded.
- 20. The method of claim 19 wherein the step of forming includes mixing, molding and
- sintering reactive powders.
- 21. The method of claim 19 wherein the step of forming includes hot pressing reactive
- 2 powders.
- 22. The method of claim 19 wherein the step of forming includes fusion casting.
- 23. The method of claim 19, wherein said dissipative material has a resistance in the
- range of  $10^5$  to  $10^{12}$  ohms.
- stiffness to resist bending when hot, and has a high enough abrasiveness to function for east two uses. 2
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- 1 25. The method of claim 19, wherein said dissipative material is an extrinsic
- 2 semiconducting material which has dopant atoms in the appropriate concentration and
- 3 valence states to produce said resistance.
- 1 26. The method of claim 19, wherein said dissipative material comprises a
- 2 polycrystalline silicon carbide uniformly doped with boron.
- 1 27. The method of claim 19, wherein said dissipative material comprises a doped
- 2 semiconductor, and said step of forming includes forming said doped semiconductor on
- 3 an insulating core.
- 1 28. The method of claim 27, wherein said insulating core is diamond and said doped
- 2 semiconductor is an outer surface of said diamond that is ion implanted with boron.
- 1 29. The method of claim 19, wherein said dissipative material comprises a doped
- 2 semiconductor, and said step of forming includes forming said doped semiconductor on a
- 3 conducting core.
  - 30. The method of claim 29, wherein said conductor is cobalt bonded tungsten carbide,
  - and said doped semiconductor is titanium nitride carbide.
- 1 31. The method of claim 19 wherein the step of forming comprises:

	2	mixing fine particles of a composition appropriate for forming said dissipative
	3	material with a solvent, a dispersant, a binder, and a sintering aid to form a mixture;
<b>∀</b> ′	4	molding the mixture into at least one wedge;
	5	drying the at least one wedge;
	6	providing a heat-treating atmosphere that facilitates removal of the binder at a low
	7	temperature and that controls the valence of the dopant atoms;
	8	heating the at least one wedge at a temperature appropriate to remove the binder
	9	and the dispersant;
•	10	heating the at least one wedge to a high enough temperature to sinter the particles
$\alpha \perp$	11	together into a solid structure having low porosity; and
6	12	cooling the solid structure.
	1.	32. The method of claim 19 wherein the step of forming comprises:
	2	forming a solid structure; and
	3	machining the solid structure to achieve a required size and shape within a
	4	required tolerance.
	1	33. The method of claim 19 wherein the step of forming comprises:
	2	forming a solid structure; and
	<del></del>	treating the solid structure by ion implementation, vapor deposition, chemical
supp	.4	vapor deposition, physical deposition, electro-plating deposition, or neutron
1	5	bombardment to produce a surface layer.

- 1 34. The method of claim 33 wherein the step of forming further comprises:
- 2 producing the desired layer properties within said surface layer by heating the
- 3 solid structure in a controlled atmosphere to induce diffusion, recrystalization, dopant
- 4 activation, or valence changes of metallic ions.
- 1 35. The method of claim 19 wherein the step of forming comprises:
- 2 mixing fine particles of a composition appropriate for forming said dissipative
- 3 material with binders and sintering aids into a mixture;
- 4 choosing a hot pressing atmosphere to control a valence of dopant atoms;
- 5 pressing the mixture in a mold at a temperature high enough to cause
- 6 consolidation and binding of the particles into a solid structure having low porosity; and
- 7 cooling and removing the solid structure from the mold.
- 1 36. The method of claim 19 wherein the step of forming comprises:
- 2 melting metals of a composition appropriate for forming said dissipative material
- 3 in a non-reactive crucible;
- 4 casting the melted metals into an ingot;
- 5 rolling the ingot into a rolled ingot;
- 6 extruding the rolled ingot into an extruded material;
- drawing the extruded material into a drawn material;
- 8 pressing the drawn material in a pressed material; and
- 9 heating the pressed material.

37. A method of using a bonding tip, comprising:

providing a bonding tip made with a dissipative material that has a resistance low enough to prevent a discharge of charge to a device being bonded and high enough to avoid current flow large enough to damage said device being bonded;

heating the boding tip using electrical resistive heating; and

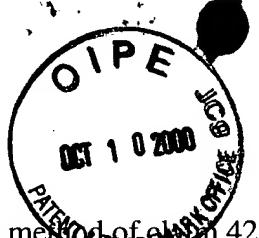
using the bonding tip to melt a bonding material.

- 1 38. The method of claim 37, wherein said dissipative material has a resistance in the
- 2 range of  $10^5$  to  $10^{12}$  ohms.
- 1 39. The method of claim 37, wherein said dissipative material has a high enough
- 2 stiffness to resist bending when hot and has a high enough abrasiveness to function for at
- 3 least two uses.

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- 1 40. The method of claim 37, wherein said dissipative material is an extrinsic
- 2 semiconducting material which has dopant atoms in appropriate concentration and
- 3 valence states to produce said resistance.
- 1 41. The method of claim 37 wherein said dissipative material comprises a polycrystalline
- 2 silicon carbide uniformly doped with boron.
- 1 42. The method of claim 37, wherein said dissipative material comprises a doped
- 2 semiconductor formed on an insulating core.



- 1 43. The method of elastin 42, wherein said insulating core is diamond and said doped
- 2 semiconductor is an outer surface of said diamond that is ion implanted with boron.

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44. The method of claim 37 wherein said dissipative material is a doped

semiconductor formed on a conducting core.

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45. The method of claim 44, wherein said conducting core is cobalt bonded tungsten

carbide; and said doped semiconductor is titanium nitride carbide.

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